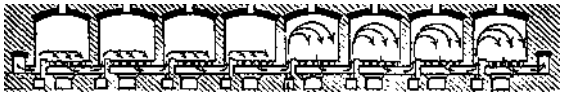
be injured by sudden cooling. An open checker is built on the hearth of the tunnel with these lumps of clay, and on top of this the brick to be burned are set in a close checker in the upper part of the chamber. In this way the current of hot gases, which tends to seek the highest point of the tunnel chamber, is retarded in its flow and forced downward; the gases cool and produce a current of colder waste gases over the hearth of the tunnel. The brick which fill the upper part of the chamber are uniformly

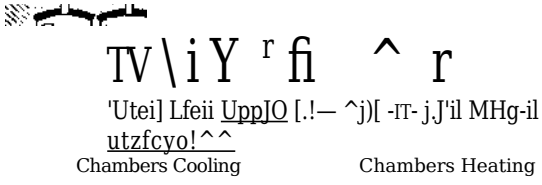


Chambers Cooling Gas Chambers Heating

FIG. 92.

heated and burned, but the utilization of their heat for the pre-heating of the air is very poor and the kiln operates with very little preheat of the air supply.

The construction and design of ring tunnel kilns is therefore defective, because the currents of air being heated and those of gases being cooled have the same direction of flow, whereas it is necessary that the current which is giving off heat should flow downward and that the current which is being heated should flow upward. A ring tunnel furnace is ordinarily unable to satisfy



Chambers Cooling Chambers Heating

FIG. **93.**

this condition, and for this reason its work will always be unsatisfactory.

The existing systems of ring chamber furnaces or kilns of the Mendheim and other similar types are but little more satisfactory than the ordinary types of kilns. Figs. 92 and 93 show two types

of the Mendheim ring chamber kiln, the latter of these having a high bridge wall. The outside air enters the system through the chamber from which the burned ware is being removed, and passes in succession through all of the chambers which are cooling.